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Title: Report Viewgraphs for IC project: Regional ocean and land ice ensemble studies to better quantify uncertainties in Antarctic-driven sea level rise

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- Two sets of simulations were performed within this allocation:
  1) a 10-year experiment using the ACCESS 1.3 model data for the open ocean boundary conditions, and MAR-downscaled ACCESS 1.3 data for the atmospheric forcing;
  2) a 15-year experiment with similar conditions as the one in 1), but with a different initial condition for temperature and salinity nearby the ice shelves.
- Results from simulation 1) are presented in Figure 1, in terms of sea-ice extent, and they show a significant loss of model sea-ice in winter compared with observations. Further investigation of these model biases revealed an important bias in the MAR-ACCESS precipitation, with the model underestimating precipitation over the ocean to the point that strong convection was triggered. The impact of these biases on the upper ocean stratification appears to eventually affect the sub ice shelf melt rates as well (see Fig. 2).
- Results from simulation 2) are presented in Figure 2 in terms of averaged melt rates for specific ice shelves around Antarctica. The simulated melt rates are comparable with observational values, although a trend is visible and possibly due to the biases described above.

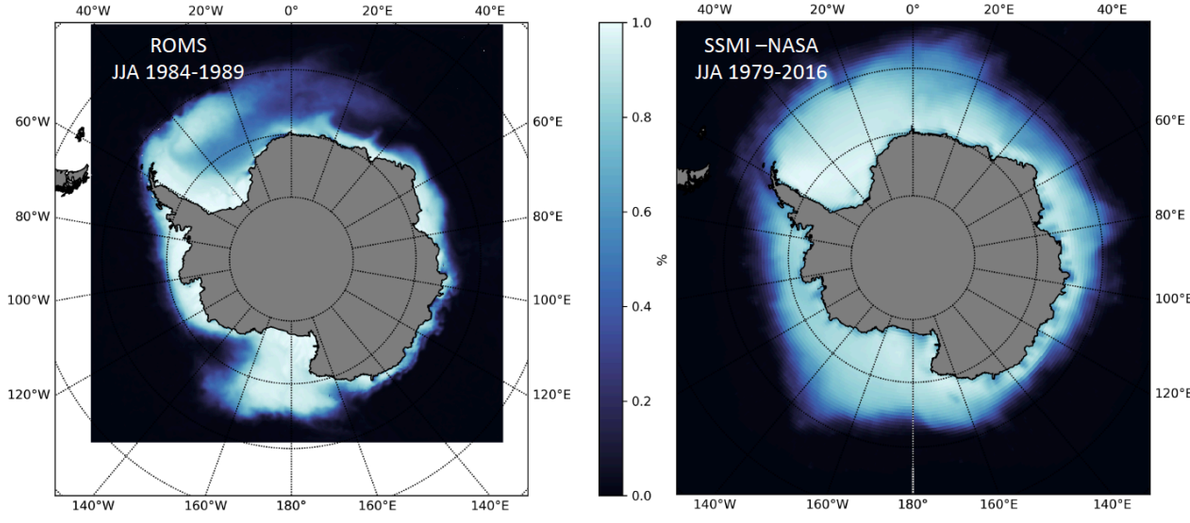

Figure 1: Sea-ice concentration (%) in winter simulated by the ROMS model (left panels; climatologies are computed over years 1984-1989 and for months June-July-August), and observed by SSMI satellite observations.

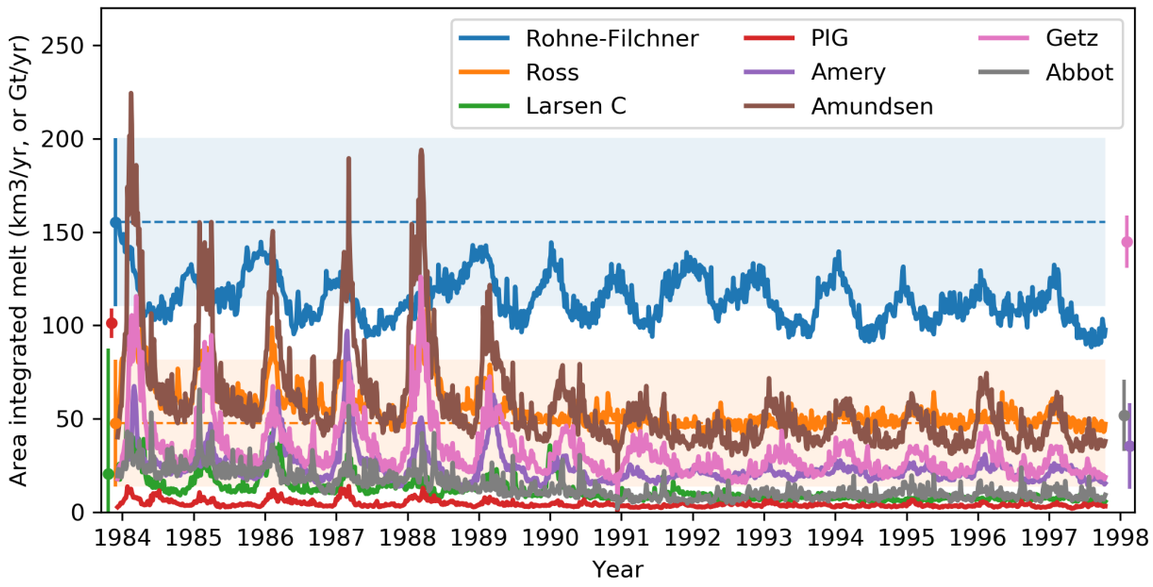

Figure 2: Time series of mass loss from ice-shelves (melt rates) in ROMS, for specific ice shelves, and compared with observed values reported in Rignot et al, 2013 (dots and shading).

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